

Instrument Characteristics and Data Products for NASA's Next SAR Mission

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A concept for a free-flying, Earth-observing synthetic aperture radar that is part of NASA's investment in the development and use of imaging radar science and technology in the public and private sector is described. In order to support NASA science, the petroleum industry, and commercial interests, this proposed system will have a dual frequency (L- and X-bands) polarimetric SAR instrument. This instrument enables a number of exciting Earth science and commercial remote sensing applications including natural hazard monitoring, land classification, crop monitoring, oil and mineral exploration, and oil spill detection and measurement, to name a few.

The highest priority science objective of this mission is surface change detection using L-band repeat pass interferometry to map seismic and volcanic deformation, subsidence, and ice-sheet and glacier movement. SAR polarimetry at L-band can be used for various land applications such as land classification, forest regrowth monitoring, and soil moisture estimation. In order to acquire SAR data over a wide swath (larger than 250 km), the instrument can collect ScanSAR data at both L- and X-bands by using electronic beam steering. Capabilities include oil spill detection and discriminating between different types of oils by simultaneously collecting L-band polarimetric data and X-band high resolution imagery. In this talk, we will discuss the proposed instrument characteristics in detail with various space-borne and airborne examples.

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